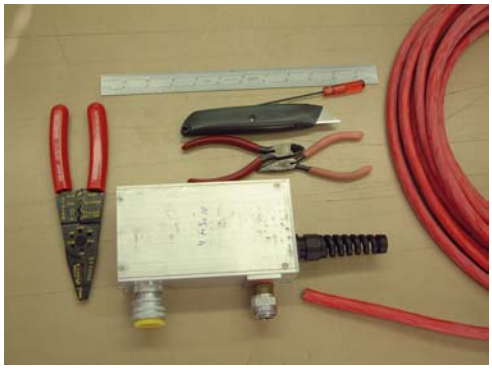
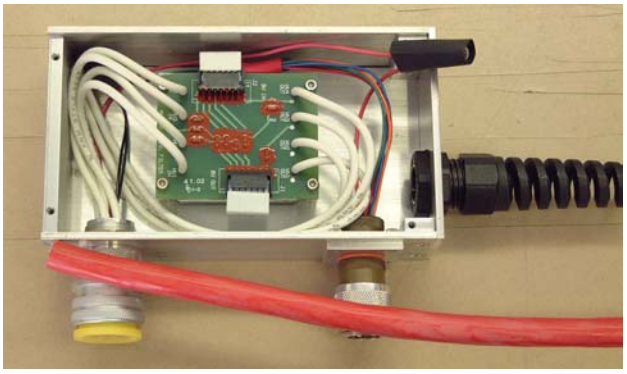
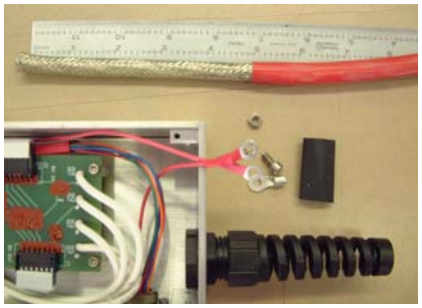
How to Terminate the HV Connector Box.

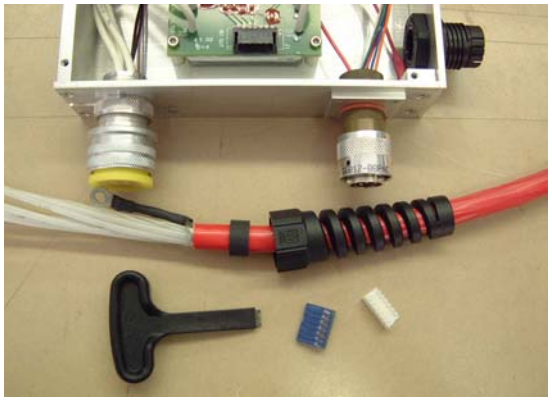
Introduction.

1. Cable preparation.

Strip off 5’ of the cable jacket and leave 1.5” of the shield, unbraid the shield and crimp a provided O-ring terminal (AWG 10, stud size #8 (4 mm)) on it, isolate exposed shield with heat shrink. Slide strain relief and rubber seal on the cable before inserting it in the HV Connector Box.



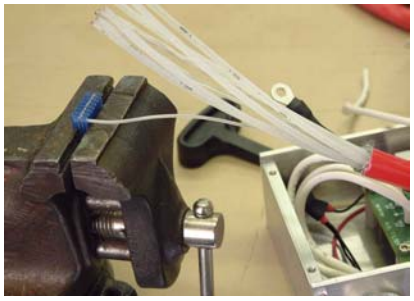



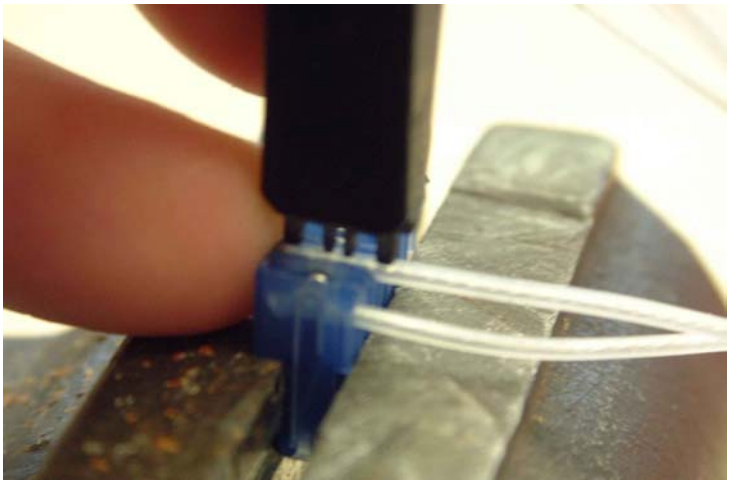
2. Bias Voltage connector installation.

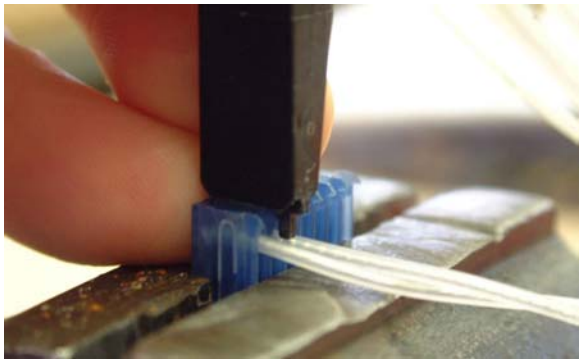
Fix provided 7 contact TYCO/AMP MTA.100" (DigiKey part #A19035-ND) connector in a wise and press individual BV wires in the slots using TYCO/AMP T-handle tool for MTA.100" connectors (DigiKey part# A9982-ND).

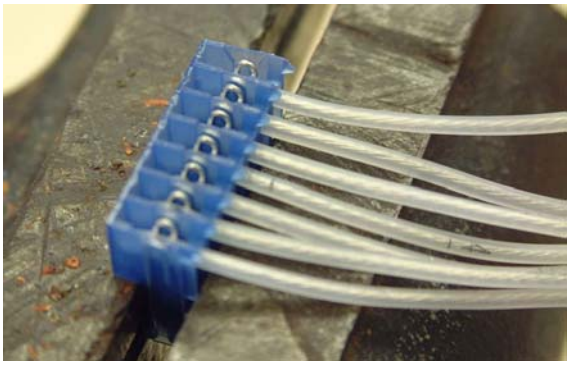
BW wire #	1	2	3	4	5	6	7
Connector contact #	7	6	5	4	3	2	1

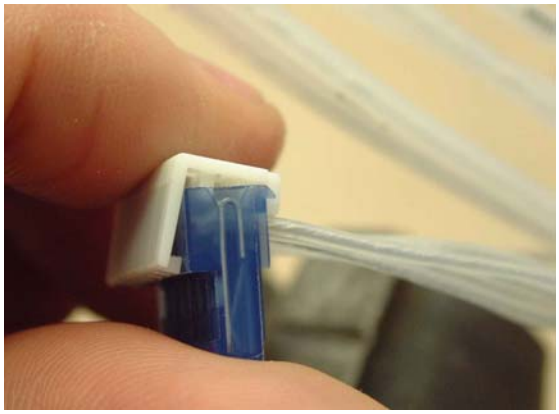
Snap dust cover on the connector (DigiKey part# A19235-ND).

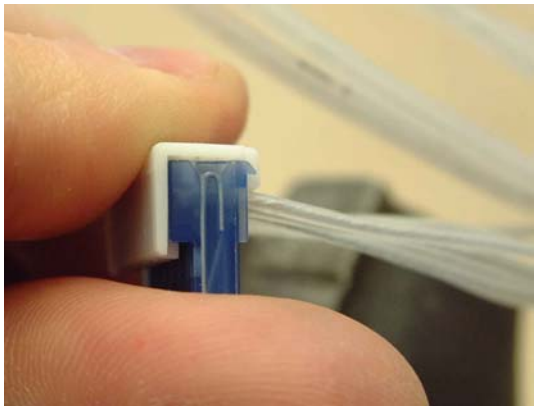








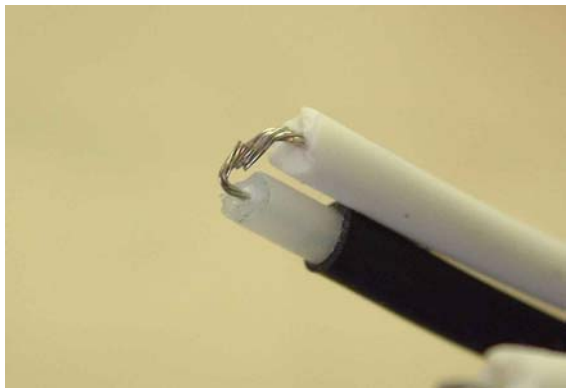


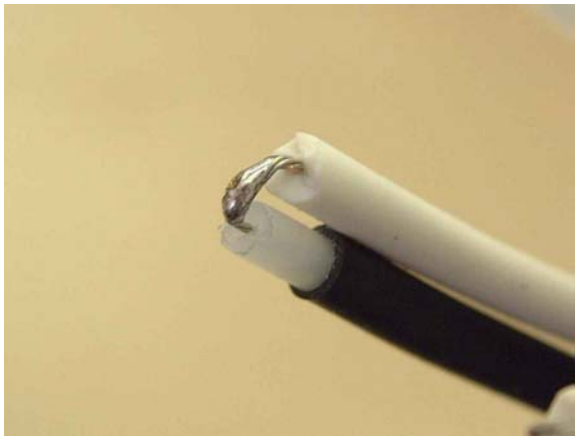
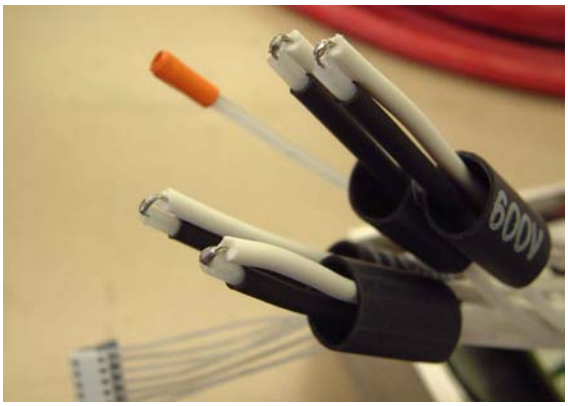


3. High Voltage wires termination.

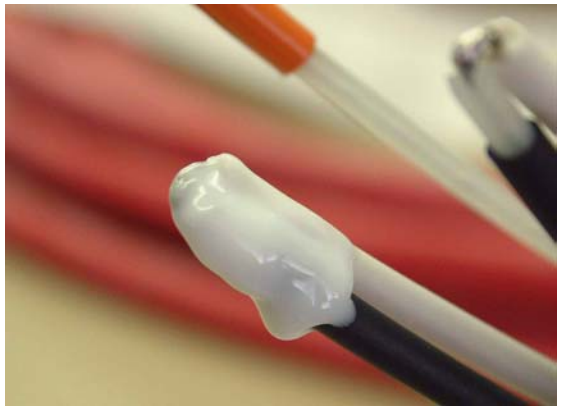
Prepare 4×1” (25 mm) adhesive lined 0.4” OD heat shrink tubes and 4×1.5” low shrink temperature 3/16” OD polyolefin heat shrink tubes. Label and set aside HV wire #5 – it is not being used. Strip the rest ofHV wires to 1/8” (3 mm). Clean thoroughly and dry the HV wires and inside of the 3/16” heat shrink tubes with alcohol. Place the 3/16” heat shrink tubes on the cable HV wires about ¼” (6 mm) off the ends and shrink them with a heat gun, make sure to heat the central part until polyethylene inside starts melting, but take it easier at the ends of the tube so the wire insulation won’t melt there. Clean it with alcohol again.

Place the 0.4” heat shrink pieces on the pairs of HV wires (cable wire 1 – to the “HV_Out_1” of the HV board). Solder pairs together as indicated. Make sure there are no unsoldered wire strands and/or sharp points on the solder. Clean solder junctions with alcohol.

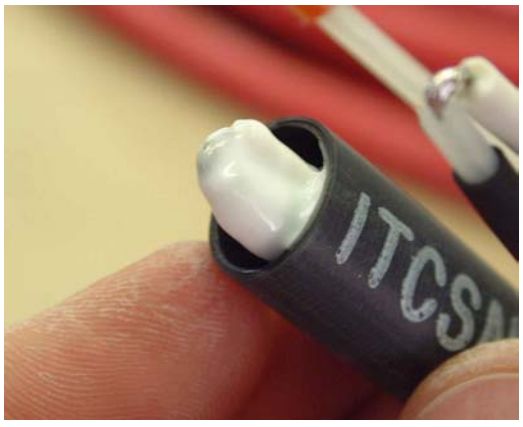


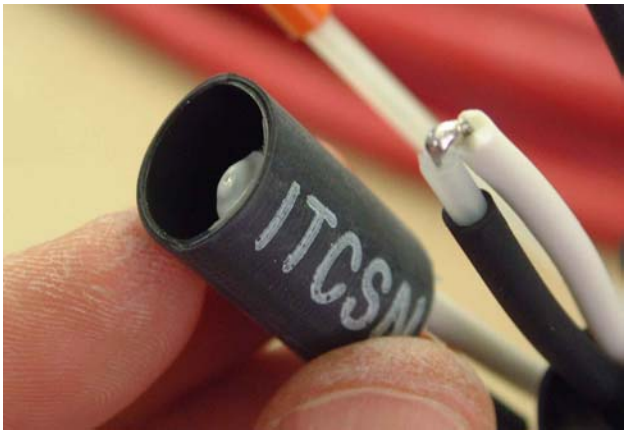



Spread the wires and squeeze RTV112 through the gap, so it fills between the wires. Cover wires with a layer of RTV.

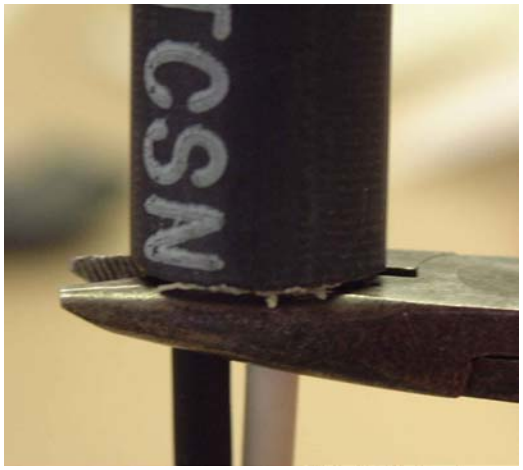



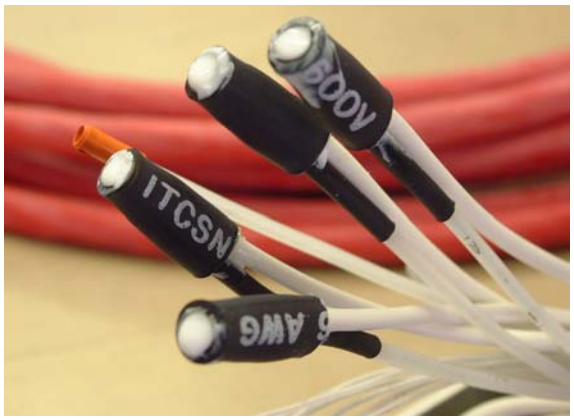
Slide the heat shrink up, so that the solder junction is about 1/3 way inside the tube.





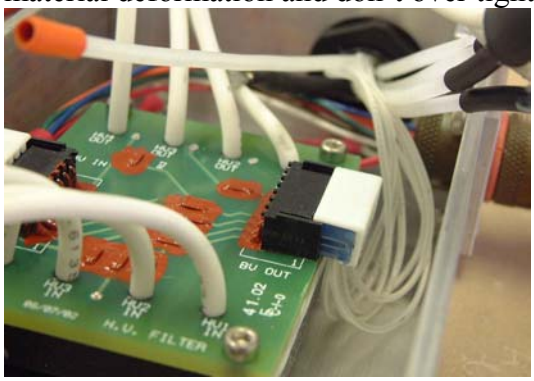
Hold the wires and heat shrink tube this position with a pair of pliers from the silicone wire side. Shrink the tube with a heat gun working from the bottom. Trim any excess RTV or add more if not full (make sure no air is trapped inside).
Let it cure 4 hours before further handling and 24 hours before applying high voltage.

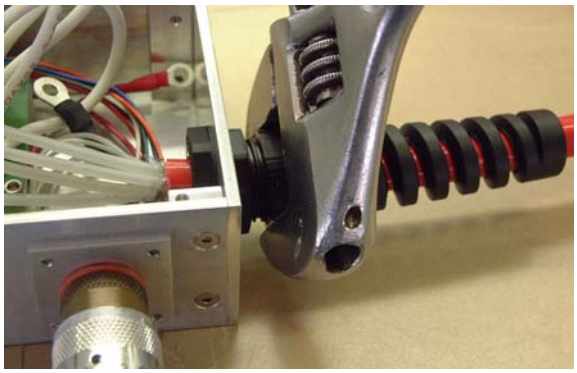




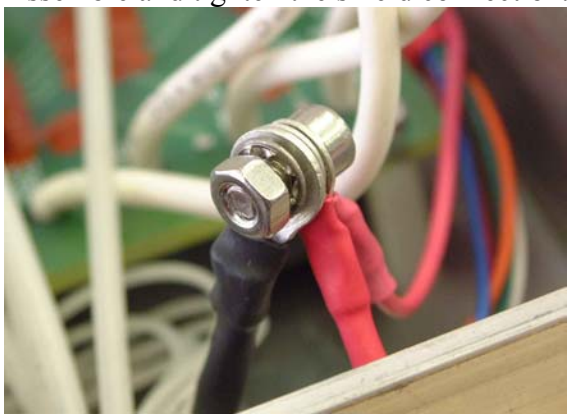
4. Assembling the HV Connector Box.

Plug the BV plug into the J1 connector. Assemble the strain relief and tighten it (watch material deformation and don't over tighten).

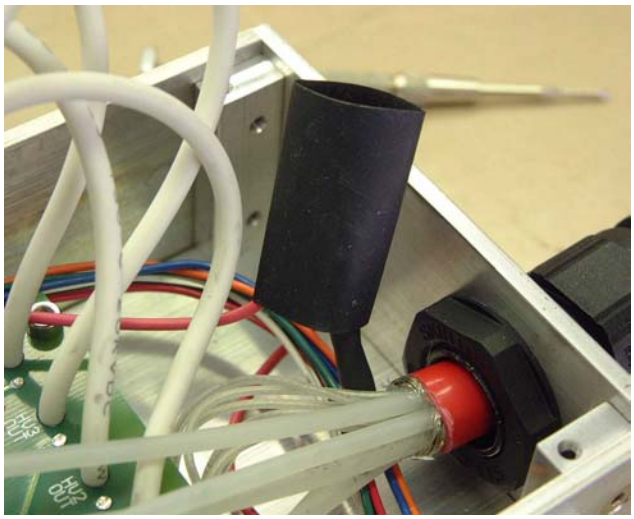
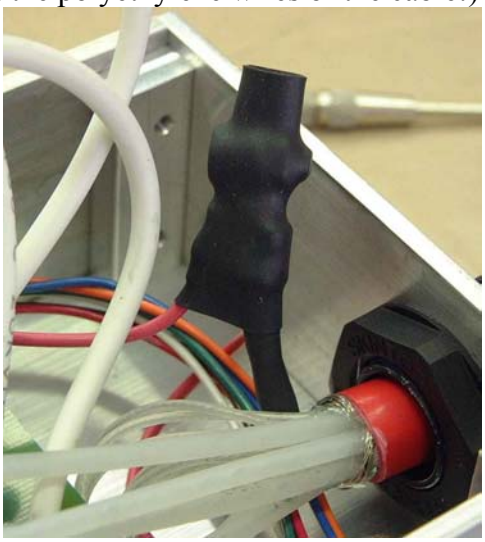




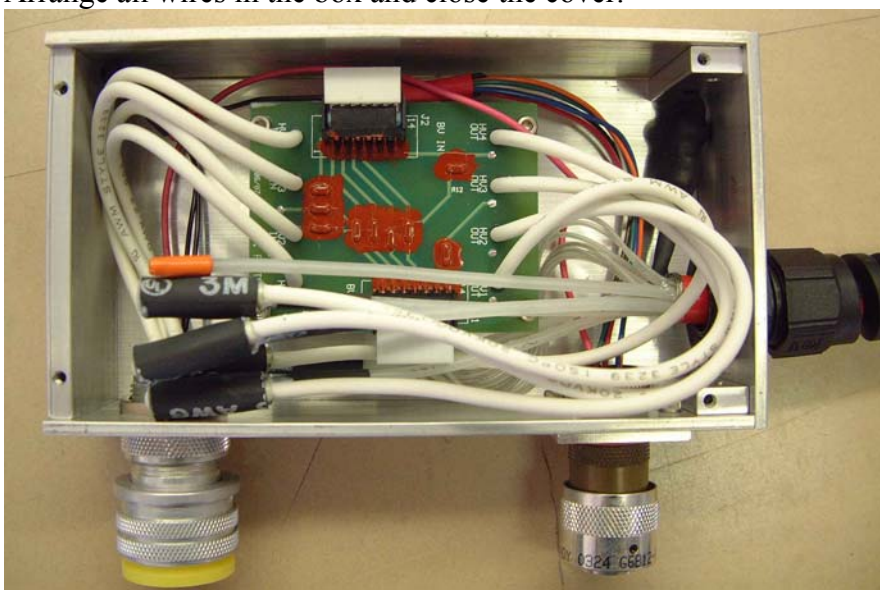
Assemble and tighten the shield connection.




Insulate it with heat shrink (be careful not to melt the polyethylene wires of the cable!)

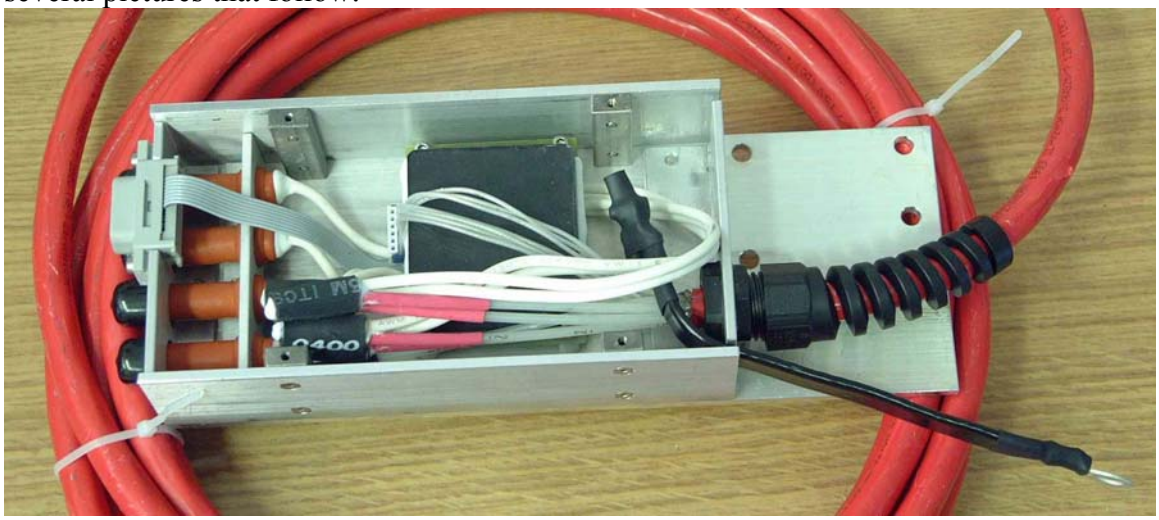



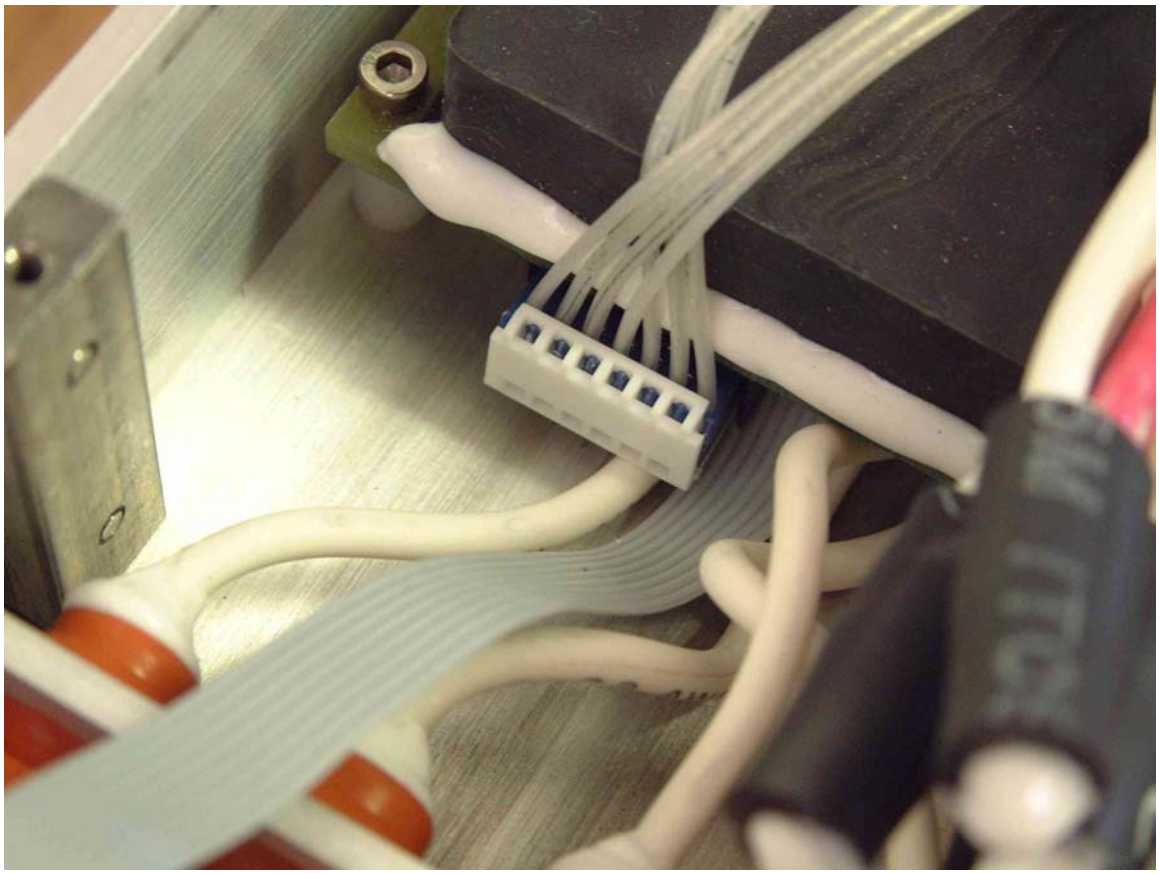
Arrange all wires in the box and close the cover.

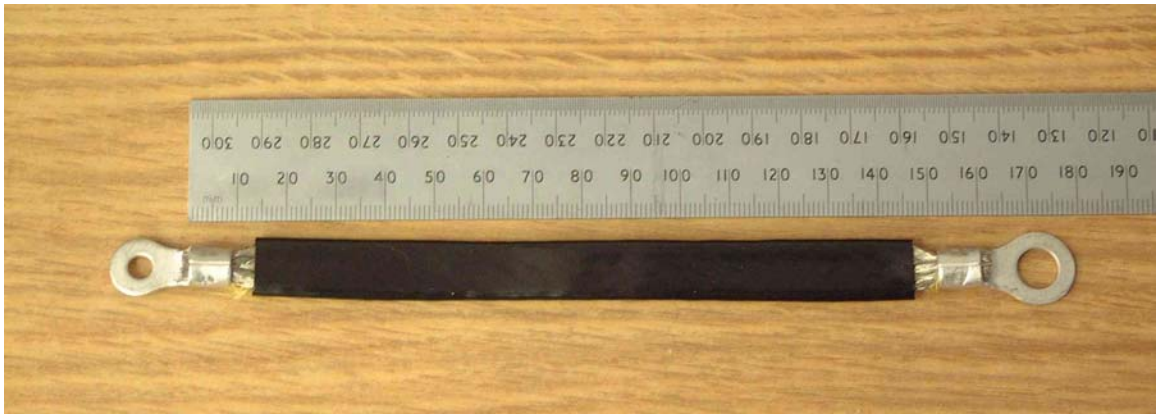


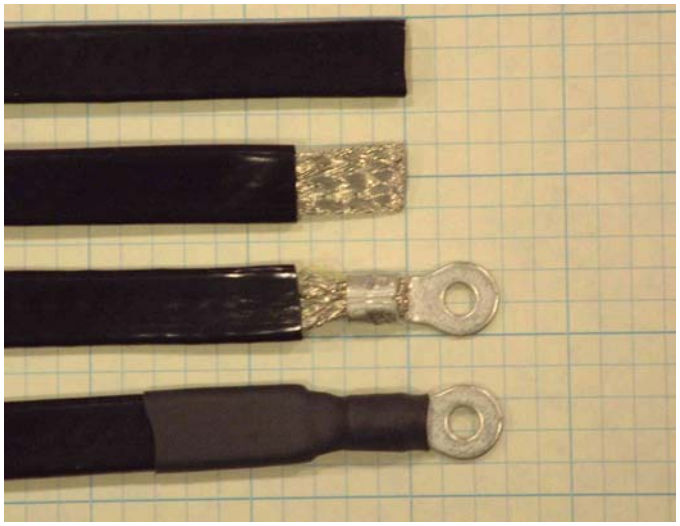
How to Terminate the HV Unit.

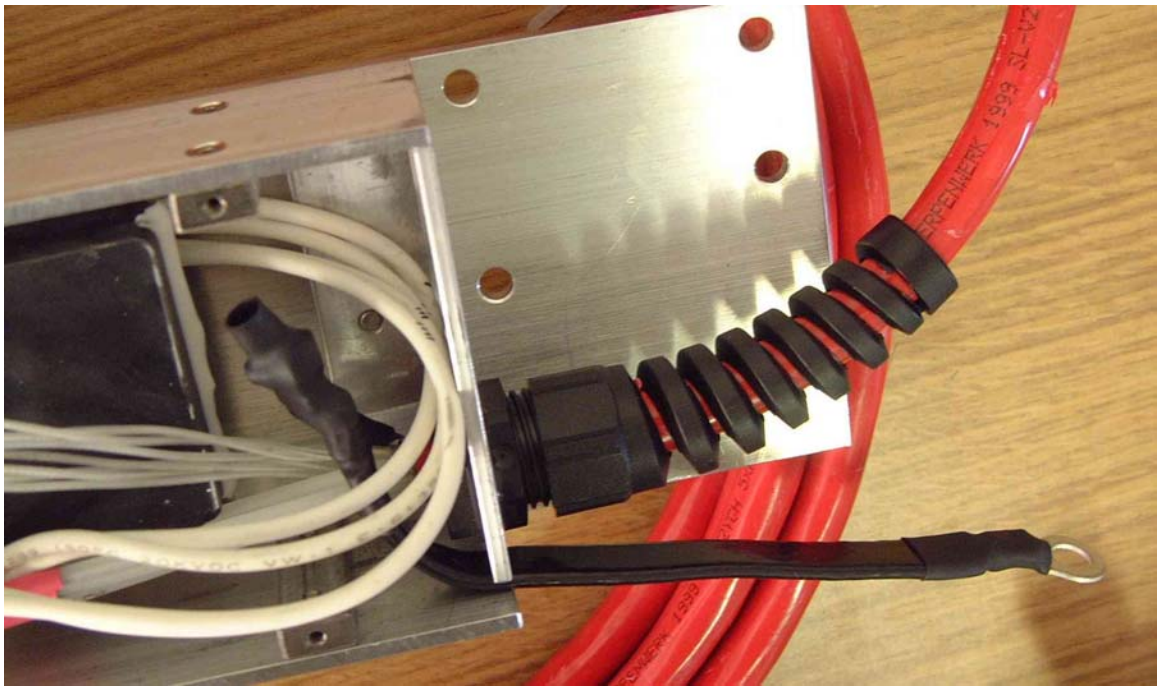
To connect the HV Unit to a HV cable, use the very same technique as described above. Check with the electric diagram for the BV connector-wire number matching and review several pictures that follow:





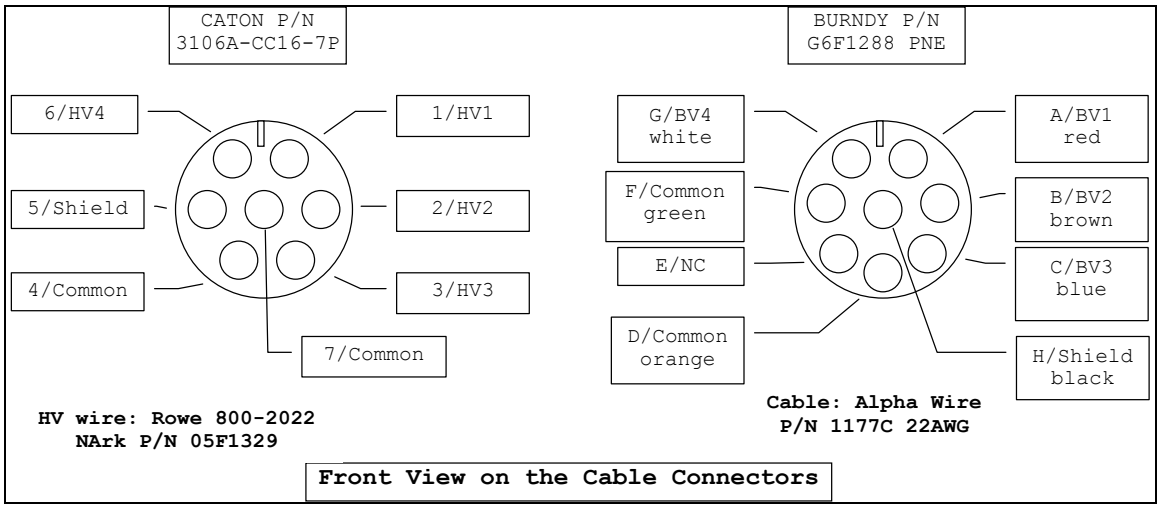


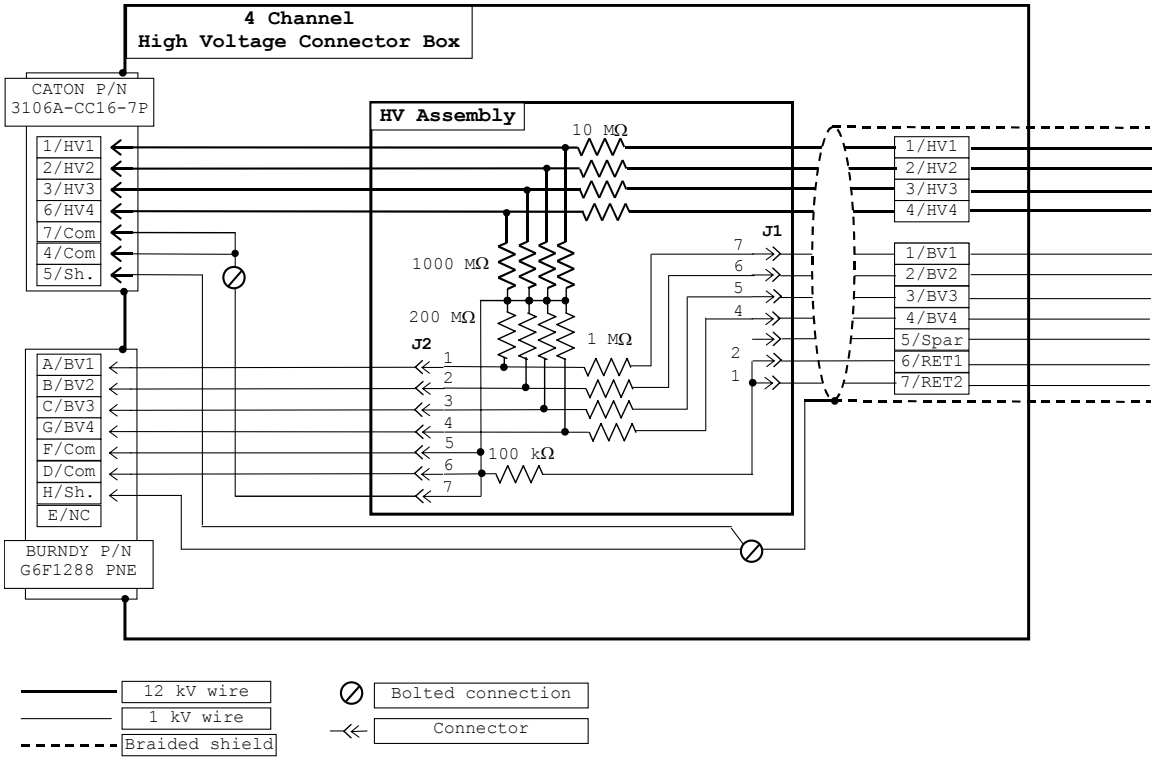


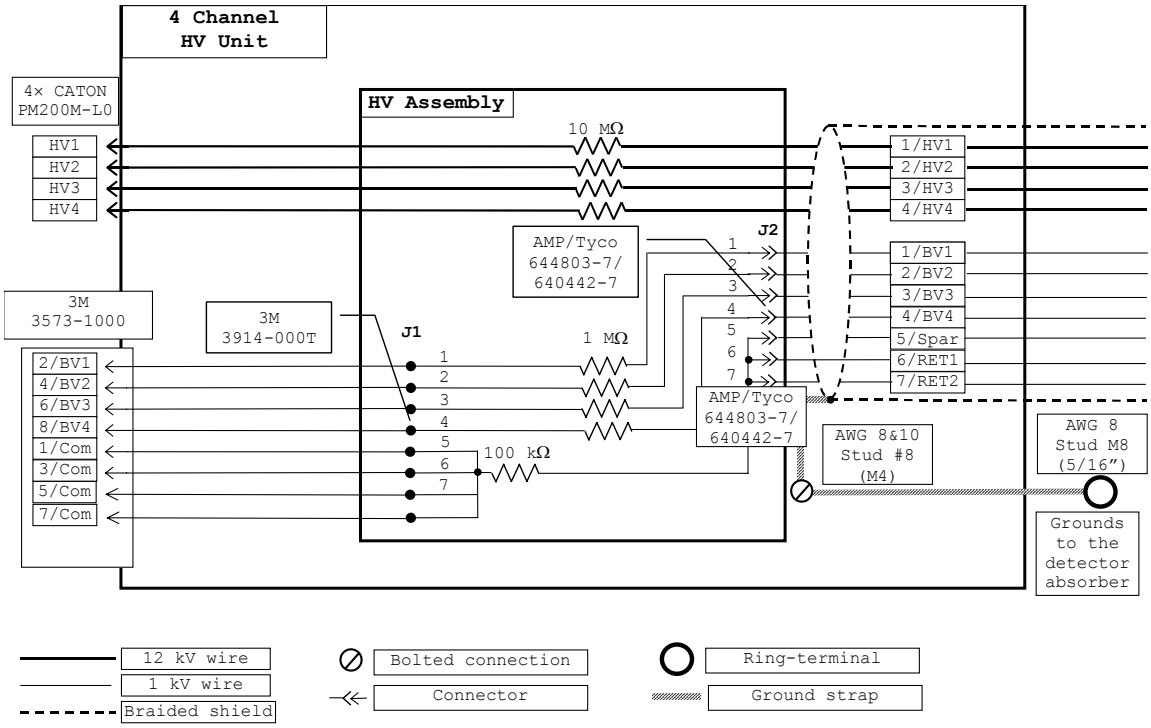


Appendix A.

Cable electrical diagram.






4 Channel
HV Unit
4× CATON
PM200M-L0
HV1
HV2
HV3
HV4
HV Assembly
10 MΩ
AMP/Tyco
644803-7/
640442-7
J2
1/HV1
2/HV2
3/HV3
4/HV4
1/BV1
2/BV2
3/BV3
4/BV4
5/Spar
6/RET1
7/RET2
3M
3573-1000
3M
3914-000T
J1
1 MΩ
100 kΩ
2/BV1
4/BV2
6/BV3
8/BV4
1/Com
3/Com
5/Com
7/Com
AMP/Tyco
644803-7/
640442-7
AWG 8&10
Stud #8
(M4)
AWG 8
Stud M8
(5/16")
Grounds
to the
detector
absorber
12 kV wire
1 kV wire
Braided shield
Bolted connection
Connector
Ring-terminal
Ground strap